LEARNING THEORIES

A. Edward Thorndike's Theory:

Edward Thorndike (1874 - 1949) is famous in psychology for his work on learning theory that lead to the development of operant conditioning within behaviourism. Whereas classical conditioning depends on developing associations between events, operant conditioning involves learning from the consequences of our behaviour. Skinner wasn't the first psychologist to study learning by consequences. Indeed, Skinner's theory of operant conditioning is built on the ideas of Edward Thorndike.

Thorndike's theory consists of three primary laws:

1) Law of effect - responses to a situation which are followed by a rewarding state of affairs will be strengthened and become habitual responses to that situation,

2) Law of readiness - a series of responses can be chained together to satisfy some goal which will result in annoyance if blocked, and

3) Law of exercise - connections become strengthened with practice and weakened when practice is discontinued. A corollary of the law of effect was that responses that reduce the likelihood of achieving a rewarding state (i.e., punishments, failures) will decrease in strength.

The theory suggests that transfer of learning depends upon the presence of identical elements in the original and new learning situations; i.e., transfer is always specific, never general. In later versions of the theory, the concept of "belongingness" was introduced; connections are more readily established if the person perceives that stimuli or responses go together (c.f. Gestalt principles). Another concept introduced was "polarity" which specifies that connections occur more easily in the direction in which they were originally formed than the

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opposite. Thorndike also introduced the "spread of effect" idea, i.e., rewards affect not only the connection that produced them but temporally adjacent Sconnections as well.

B. Guthrie’s Theory:

Guthrie's contiguity theory specifies that "a combination of stimuli which has accompanied a movement will on its recurrence tend to be followed by that movement". According to Guthrie, all learning was a consequence of association between a particular stimulus and response. Furthermore, Guthrie argued that stimuli and responses affect specific sensory-motor patterns; what is learned are movements, not behaviours.

In contiguity theory, rewards or punishment play no significant role in learning since they occur after the association between stimulus and response has been made. Learning takes place in a single trial (all or none). However, since each stimulus pattern is slightly different, many trials may be necessary to produce a general response. One interesting principle that arises from this position is called "postremity" which specifies that we always learn the last thing we do in response to a specific stimulus situation.

Contiguity theory suggests that forgetting is due to interference rather than the passage of time; stimuli become associated with new responses. Previous conditioning can also be changed by being associated with inhibiting responses such as fear or fatigue. The role of motivation is to create a state of arousal and activity which produces responses that can be conditioned.

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C. Hull’s Theory:

Hull developed a version of behaviourism in which the stimulus (S) affects the organism (O) and the resulting response (R) depends upon characteristics of both O and S. In other words, Hull was interested in studying intervening variables that affected behaviour such as initial drive, incentives, inhibitors, and prior training (habit strength). Like other forms of behaviour theory, reinforcement is the primary factor that determines learning. However, in Hull's theory, drive reduction or need satisfaction plays a much more important role in behaviour than in other frameworks (i.e., connectionism, operant conditioning).

Hull's theoretical framework consisted of many postulates stated in mathematical form;

They include:

1) Organisms possess a hierarchy of needs which are aroused under conditions of stimulation and drive,

2) Habit strength increases with activities that are associated with primary or secondary reinforcement

3) Habit strength aroused by a stimulus other than the one originally conditioned depends upon the closeness of the second stimulus in terms of discrimination thresholds

4) Stimuli associated with the cessation of a response become conditioned inhibitors

5) The more the effective reaction potential exceeds the reaction threshold, the shorter the latency of response.

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As these postulates indicate, Hull proposed many types of variables that accounted for generalization, motivation, and variability (oscillation) in learning.

One of the most important concepts in Hull's theory was the habit strength hierarchy: for a given stimulus, an organism can respond in a number of ways. The likelihood of a specific response has a probability which can be changed by reward and is affected by various other variables (e.g. inhibition). In some respects, habit strength hierarchies resemble components of cognitive theories such as schema and production systems.

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